

1. For a network of interconnected business processes, a method for assigning credit to a first input of a first process with respect to a global output of the network, the first process having a plurality of inputs and outputs, at least one of said outputs being a chained output that is an input to a second process in the network and contributes to the global output, comprising:

obtaining a credit assignment for each of the chained outputs of the first process with respect to the global output;

using a first-order differentiable model of the first process to derive a local credit assignment for the first input; and

applying a chain rule for ordered partial derivatives using the first-order differentiable model, the local credit assignment for the first input, and the credit assignments for the chained outputs of the first process with respect to the global output to assign credit to the first input with respect to the global output.

2. The method of claim 1, wherein the first-order differentiable model is a neural network.

3. The method of claim 1, wherein the first-order differentiable model is a first-principles model.

4. The method of claim 1, wherein the first process is managed by a first process management module and the first process management module determines the credit assignment of the first input.

5. The method of claim 1, wherein the first process is managed by a first process management module and the first process management module transmits the local credit

assignment over a network to a second program that computes the credit assignment for the first input.

6. The method of claim 1, wherein the global output is a financial business objective.

7. For a network of interconnected business processes, a method for assigning credit to a first input of a first process with respect to an output of a second process, wherein at least one output of the first process is a chained input to the second process, comprising:

determining a first credit assignment for the chained input to the second process with respect to the output of the second process on a first process management computer;

determining a second credit assignment for the first input with respect to the output of the first process on a second process management computer; and

determining a credit assignment for the input to the first process with respect to the output of the second process using the first credit assignment and the second credit assignment.

8. The method of claim 7, further comprising modeling the first process with a first-order-differentiable model.

9. The method of claim 8, wherein modeling the first process involves using a neural network and further comprising using the neural network to determine the second credit assignment.

10. The method of claim 8, wherein modeling the first process involves using a first-principles model and further comprising using the neural network to determine the second credit assignment.

11. The method of claim 8, further comprising managing the first process by a first process management module executing on the first computer, wherein the first process management module determines the credit assignment of the first input with respect to the output of the second process.

12. The method of claim 8, further comprising managing the first process by a first process management module executing on a first process management computer, wherein the first process management module transmits the first credit assignment over a network to a second program that determines the credit assignment for the first input with respect to the output of the second process.

13. The method of claim 8, wherein the second output is a financial business objective.

14. A distributed process control system for managing a plurality of interconnected processes contributing to a global output, comprising:

a first process management module corresponding to a first process, wherein the first process has at least one input and at least one output contributing to a global output, the process management module including a first-order-differentiable representation of the first process, and a function for determining a credit of the at least one input with respect to the global output using a credit of at least one output and including a function for communicating the credit of at least one input with respect to the global output to at least one other process management module, the first process management module executing on a first process management computer;

a second process management module, corresponding to a second process, in communication with the first process management module, wherein the second process has at least one input and at least one output contributing to the global output, the second process management module having at least one input and at least one output, wherein at least one input corresponds to one of the at least one outputs of the first process management module, the process management module including a first-order-differentiable representation of the second process, and including a function for determining the credit of at least one input with respect to the global output using a credit of at least one output and including a function for communicating the credit of at least one input with respect to the global output to at least one other process management module, the second process management module executing on a second process management computer ; and

a communication link between the first process management module and the second process management module.

15. The method of claim 14, wherein at least one of the first-order differentiable models is a neural network.

16. The method of claim 14, wherein at least one of the first-order differentiable models is a first-principles model.

17. The method of claim 14, wherein the global output is a financial business objective.

18. A computer program product residing on a computer readable medium for use in analyzing a first business process, the first process having a plurality of inputs and at least one output, at least one of said outputs being a chained output that is an input to a second process in

the network and contributes to the global output, the computer program product containing instructions for causing a computer to:

obtain a credit assignment for each of the chained outputs of the first process with respect to the global output using an application program interface;

obtain a first-order-differentiable model of the first process; and

apply a chain rule for ordered partial derivatives to the first-order-differentiable model using the credit assignments for the chained outputs of the first process with respect to the global output to determine a credit of the first input with respect to the global output.

19. The computer program product of claim 18, wherein the first-order-differentiable model is a neural network.

20. The computer program product of claim 18, wherein the first-order-differentiable model is a first-principles model.

21. The computer program product of claim 18, wherein the global output can be redefined.

22. The computer program product of claim 18, wherein the first-order-differentiable model can be adapted.

23. A process management system for a network of interconnected business processes, comprising:

first process management means for determining a credit for at least one input of a first process with respect to a global output;

second process management means for determining a credit for at least one input of a second process with respect to the global output, wherein a least one output of the first process is chained as an input to the second process; and

communication means for communicating the credit of the chained output with respect to the global output from the second process management means to the first process management means.